

REMARKS

Claims 1-14 are pending in this application. By this Amendment, claims 1-12 are amended and claims 13 and 14 are added. Claims 3-12 are amended for form. Support for the amendments may be found in at least page 4, line 23-page 5, line 14. No new matter is added. Applicants respectfully request reconsideration and prompt allowance of the pending claims at least in light of the following remarks.

Claims 1-12 are rejected under 35 U.S.C. 112 second paragraph as being incomplete for omitting essential steps of how the temperature is estimated. By this amendment, claim 1 is amended to recite "the temperature is calculated based on a quantity of a heat of the fuel injected into a combustion chamber and the quantity of the heat of the cylinder interior gas" when heat transfer does not occur and "the temperature is calculated based on the quantity of the heat of the fuel injected into the combustion chamber, the quantity of the heat of the cylinder interior gas, and a quantity of a heat transferred between the gas mixture and the object or substance existing around the gas mixture" when heat transfer occurs. Applicants believe that amendment even further clarifies how the temperature is calculated. Applicants respectfully request withdrawal of the rejection.

Claims 1-12 are rejected under 35 U.S.C. 112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention because 1) "under the assumption" recited in claims 1 and 2 makes the claim language confusing and 2) claim language does not distinguish between the heat transfer and thermal conductivity. By this amendment, claims 1 and 2 are amended to recite "wherein" and "when" respectively as suggested by the Office Action. Regarding the relationship between the heat transfer and thermal conductivity, Applicants believe that the relationship has been further clarified by the above amendment to claim 1 reciting how the temperature is calculated. Applicants respectfully request withdrawal of the rejection.

Claim 1-8 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 2,736,167 (Teague). Applicants respectfully traverse the rejection.

In particular, Teague fails to disclose at least the feature of "when the gas mixture does not stagnate, a heat transfer does not occur between the gas mixture and an object or substance existing around the gas mixture and the temperature of the gas mixture is calculated based on a quantity of a heat of the fuel injected into the combustion chamber and a quantity of a heat of the cylinder interior gas, and when the gas mixture stagnates in a generally annular configuration in the vicinity of a side wall of the combustion chamber, the heat transfer occurs between the gas mixture and the object or substance existing around the gas mixture during a period in which the gas mixture stagnates and the temperature of the gas mixture is calculated based on the quantity of the heat of the fuel injected into the combustion chamber, the quantity of the heat of the cylinder interior gas, and a quantity of a heat transferred between the gas mixture and the object or substance existing around the gas mixture," as recited in claim 1. Teague only discloses a ram jet engine where stagnation temperatures at an inlet and an outlet of the combustion chamber are obtained by temperature probes (46A, 46B) (column 1, lines 49-51; column 2, lines 5-8). The Office Action alleges that it is implied from Teague that the difference between two temperatures is a indication of temperature loss by heat transfer to the walls and object substance of the combustion chamber. The Office Action further alleges that Teague also implies that, if needed, the heat transfer between them could be calculated based on the temperature and their heat conductivity properties. However, as discussed above, Teague only discloses to obtain the temperature by temperature probes (46A, 46B). Teague fails to disclose or suggest the claimed temperature estimation methods both when stagnation occurs and when stagnation does not occur.

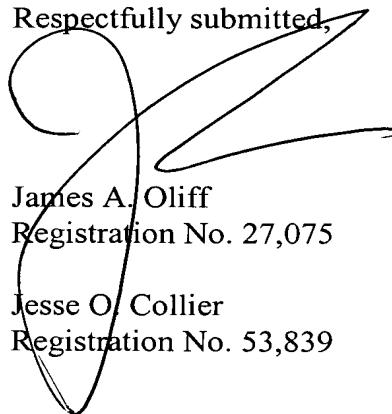
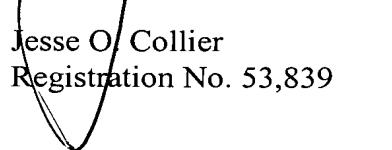
Thus, claim 1 is patentable over Teague. Further, claims 2-8 are patentable for at least the same reasons, as well as for the additional features they cite. Applicants respectfully request withdrawal of the rejections.

Claims 9-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Teague in view of U.S. Patent No. 7,032,383 (Weber). Applicants respectfully traverse the rejection.

The rejection is premised upon the presumption that Teague discloses the above discussed features of claim 1. However, as discussed, Teague fails to disclose these features. Webb fails to make up for the deficiency of Teague. Thus, claims 9-12 (and new claims 13 and 14) are also patentable for at least the same reasons, as well as for the additional features they cite. Applicants respectfully request withdrawal of the rejections.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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